



DIVERSE PASTURES AND RELEVANCE TO NEW ZEALAND DAIRY FARMING

Open day at Dairy Trust Taranaki

Waimate West Farm

23rd February 2023



AGENDA

11.30 Introduction and trial overview – *Jason Rolfe, DTT*

12.00 Lunch

12.30 Information sessions

1. Diverse pastures – pdk 16/17, *Bruce Patterson, Barenbrug*
2. Soil measurements – pdk 38, *Mags Bremer, DTT*
3. Production and business – cow shed, *Jason Rolfe, DTT*

1.30 Parnter farmer's experience – *Allan Marx*

1.50 Summary and final questions

2.00 Close

HEALTH AND SAFETY

Slippery races when wet

Vehicles and machinery may be operating

Electric fences are on

No go areas: effluent sump, chemical storage

Any accidents or near misses to be reported to DTT or DairyNZ staff

Meeting point: middle of tanker loop

First Aid kit located in the cow shed office

First Aid lead: Katie Starsmore (DairyNZ)

TRIAL OBJECTIVE

Dairy Trust Taranaki are conducting a two farmlet study over a 7-year period to assess the economic and environmental impact of diverse pastures as part of the *Regenerating Aotearoa* program. This program investigates the impacts of regenerative farming practices funded by MPI through the *sustainable food and fibre futures* (SFFF) fund.



PROFITABILITY AND PRODUCTION

determine how well diverse pastures perform relative to profit and production from conventional ryegrass-based pastures.



ENVIRONMENTAL

determine whether diverse pastures lead to reduced N leaching and retain or increase soil carbon compared with ryegrass-based pastures.



WELLBEING AND VALUES

determine whether diverse pastures provide farmers and their communities with better outcomes with regards to how the production system is perceived by themselves, consumers and other stakeholders.

TRIAL OVERVIEW

Two farmlets established in spring 2021. Farmlets balanced for location, Olsen P, Soil K, effluent use, new grass, previous cropping history and randomised on soil fertility. Both farmlets are stocked at 3.5 cows/ha and are grazed by their respective herds. The herd is full autumn calving, as the area is traditionally summer dry.

Conventional – current system with ‘conventional’ rye/clover-based pastures.

Diverse – Initially 20% of the farmlet planted in a diverse multi species pasture mix (with whole farmlet to be gradually all re-sown in diverse pastures over the length of the trial), 30% of the diverse farmlet currently sown into a Barenbrug diverse pasture mix.

Initial randomization of cows took place in January 2022. 120 Jersey & Jersey X cows randomised on age, BW, PW, calving date, liveweight, condition score and previous milk solids production.



Year 1	conventional	diverse
effective ha	17.2	17.2
cows	60	60
stocking rate cows/ha	3.5	3.5
urea kgN/ha	78	88
capital fert	synthetic	Osflo
maize	1.71 ha	1.71ha
pasture species	rye/clover	13 species mix
area regressed	30%	30%

MEASUREMENTS

Milk production

Liveweight and BCS and animal health

Mating and calving information

Supplements – all supplements harvested and fed

Soil biology – earthworms, pasture pests and nematodes

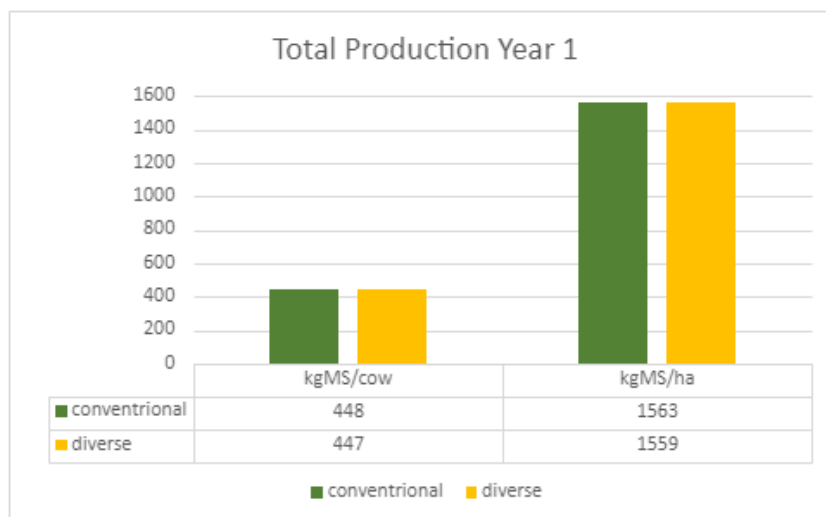
Soil physics – macroporosity and water holding capacity, soil carbon and nitrogen

N leaching – suction cups and lysimeters

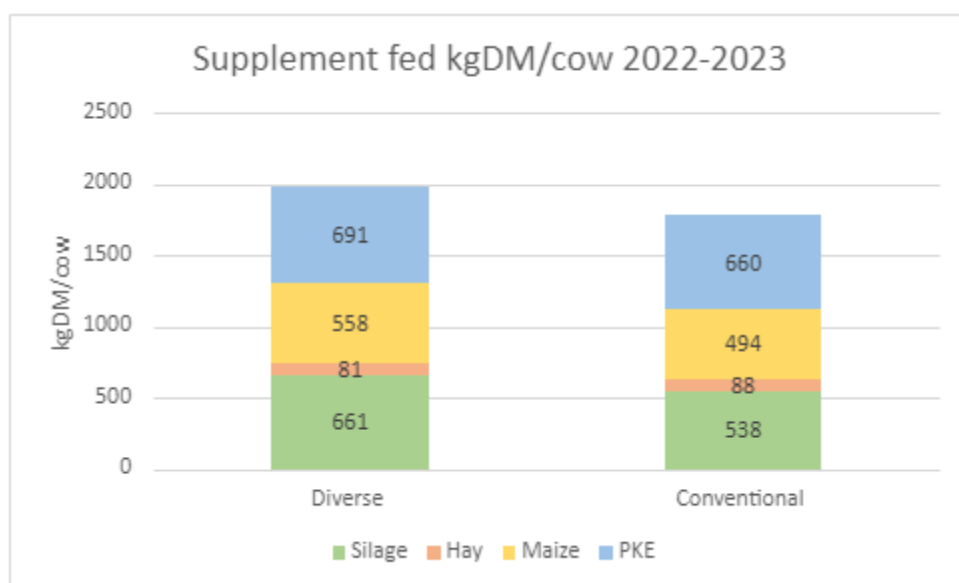
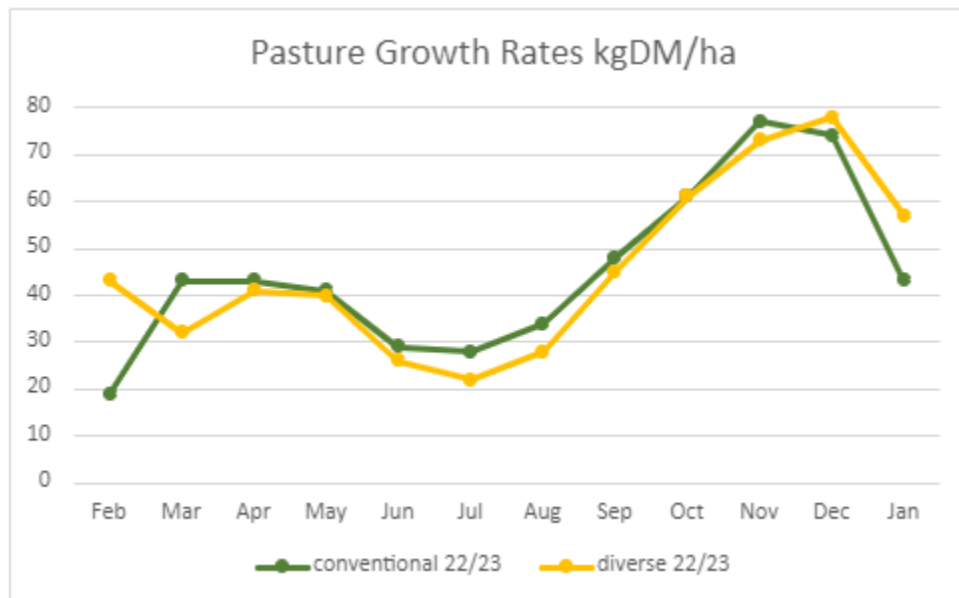
Pasture botanicals and pasture quality

Milk senses and human health benefits testing

MILK PRODUCTION – YEAR 1



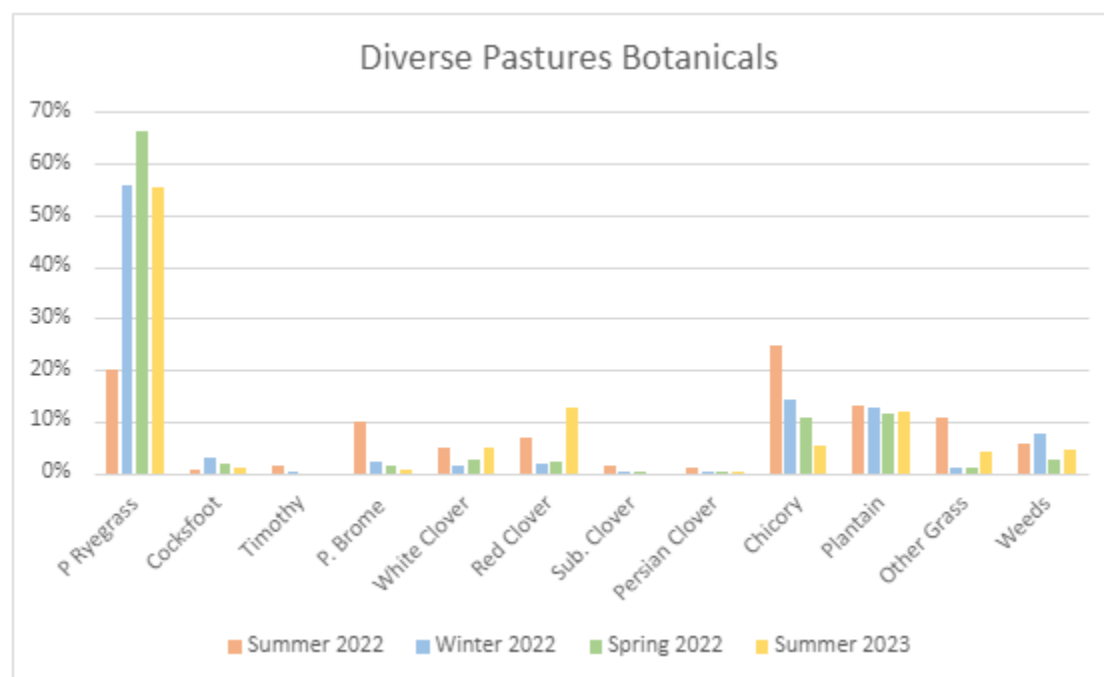
PASTURE PRODUCTION AND SUPPLEMENTS FED



Like any autumn calving system both herds required considerable amounts of supplements. This demand was further increased for the diverse herd with the lower growth rate over the winter months on the respective farmlet.

DIVERSE PASTURES

Seed Mix  BARENBRUG	
Cultivar	Rate/bag
Maxsyn NEA4 perennial ryegrass	5
Safin fine leaved cocksfoot	3
Rohan NEA2 SPR perennial ryegrass	2
Timothy	1
Bareno grazing brome	3
Tabu+ Italian ryegrass	2
Kotuku white clover	1
Weka white clover	1
Morrow MS red clover	3
Laser Persian clover	1
Coolamon sub clover	1
501 chicory	1
Captain CSP plantain	1
Total	25kg Bag



FINANCIAL RESULTS

FY 2022/2023	CONVENTIONAL	PER HA	DIVERSE	PER HA
KGMS	26,571		26,503	
KGMS/HA	1563		1559	
MILK INCOME \$	239,750	14,103	237,979	13,999
stock sales \$	29,392	1,729	23,808	1,400
total income \$	269,142	15,832	261,787	15,399
FWE \$	172,665	10,157	172,225	10,131
FWE/kgMS \$	6.5		6.5	
EBITDA \$	96,477	5,675	89,562	5,268

VARIABLE EXPENSES	CONVENTIONAL	PER HA	DIVERSE	PER HA
SILAGE HARVESTED	\$2,205	\$130	\$3,156	\$186
silage bought in	\$5,731	\$337	\$6,327	\$372
PKE	\$23,119	\$1,360	\$24,174	\$1,422
fertiliser	\$16,063	\$945	\$12,792	\$752
pasture renewal	\$2,385	\$140	\$2,614	\$154

All silage fed was bought-in silage as there was no silage harvested on farm the previous season when 30% of the farm got resown in preparation for this trial.

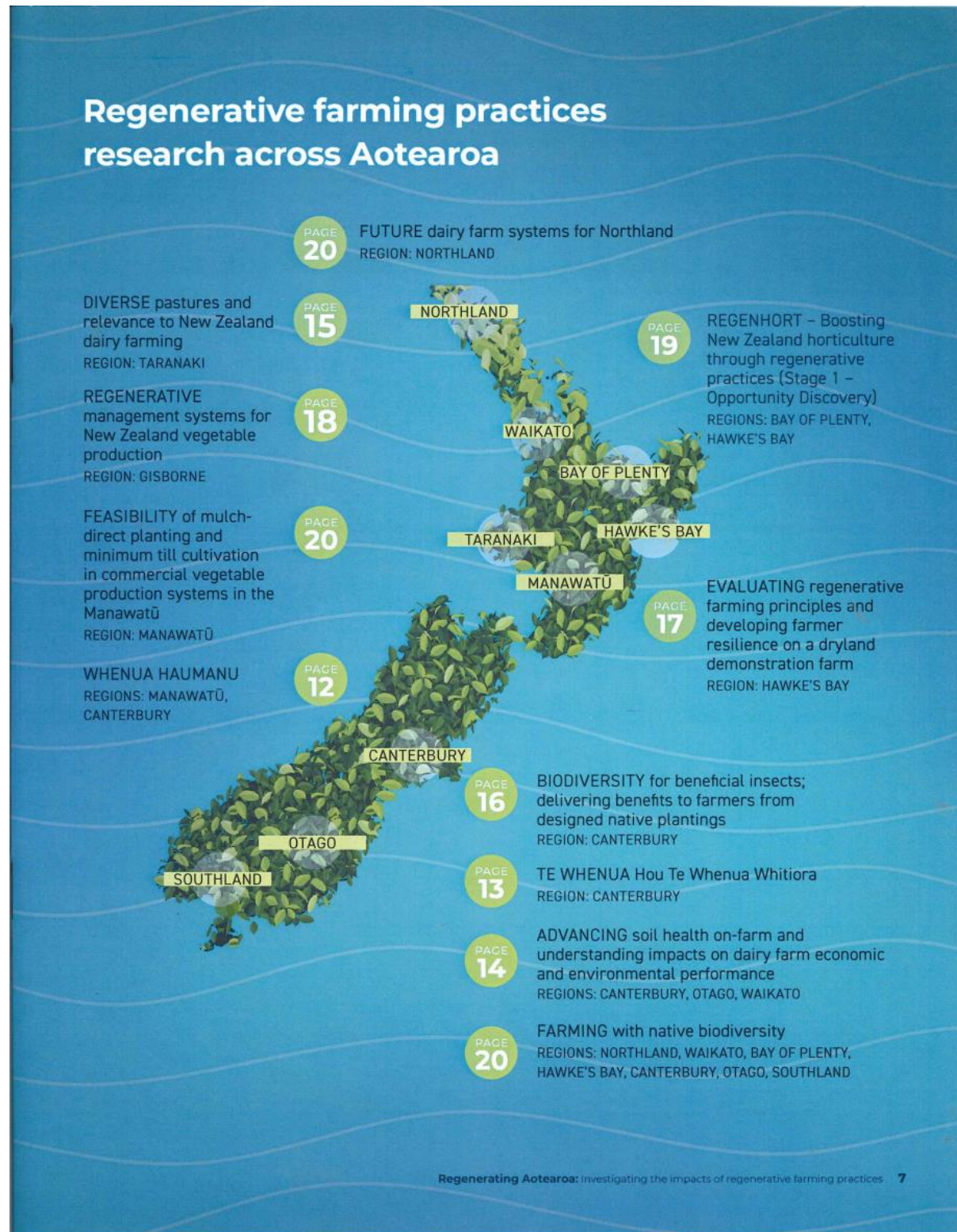
CONCLUSION

Both herds and farmlets performed very similar in the first year of this trial in terms of overall milk and pasture production. This was expected as only 30% of the diverse farmlet were sown in a diverse pasture mix. Each year another 10% of the farmlet are going to be sown into diverse pastures following a crop of maize. An equal area of the conventional farmlet is regrassed into a standard ryegrass/clover mix each year.

For the second year of this trial, we are reducing the stocking rate from 3.5 to 3.0 cows/ha to make the herds less dependent on bought in feed while milking during the winter months.

The difference in financial performance is mainly caused by higher income from stock sales for the conventional farm. This was due to a higher empty rate in the diverse herd and sale of surplus cows from the conventional to the diverse herd. Whether the difference in empty rates is a treatment effect remains to be seen. Higher cost of the synthetic fertiliser used on the conventional farmlet, compared to Osflo on the diverse farmlet, was offset by higher cost in pasture renewal and supplement use on the diverse farmlet.

MPI - Regenerating Aotearoa: Investigating the impacts of regenerative farming practices (Aug 2022).



For more information on diverse pastures and on the trials that Dairy Trust Taranaki is running on its other three farms sign up to the weekly farm walk notes and follow us across our social media channels.

Gibson

- **Step change:**

Carbon footprint down, profit up.

2020-2024

Stratford

- **Spikey:**

Spikey treatment of urine patches to reduce nitrate leaching.

2020-2024

Waimate West

- **Regenerative Trial:**

An investigation of diverse pastures

2021-2028

Kavanagh

- **Net Zero Carbon:**

A practical demonstration of a journey towards net zero carbon dairy farming on a commercially viable and representative NZ dairy farm

2022-2032



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THANKS TO OUR PARTNERS:

Ministry for Primary Industries
Manatū Ahu Matua



*Dairy***NZ** 

 **BARENBRUG**

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 **Manaaki Whenua**
Landcare Research

